30th Applications of Computer Algebra - ACA 2025

Heraklion, Greece, July 14-18, 2025

NSC Session
NONCOMMUTATIVE SYMBOLIC COMPUTATION

Organizers:
Gérard H.E. DUCHAMP (Sorbonne University - Paris Nord, France)

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Scopes: Symbolic computation plays an important role in the study of many important functions and their special values. By constructing noncommutative formal series based on words using these symbols, one can often discover key properties of these functions and values in a uniform way. On the other hand, noncommutative formal series can be considered as a generalization of language theory in theoretical computer science. As the algorithms and combinatorics of these series are based on those of words, these two fields naturally reinforce each other. They form an ideal framework for developing software based on computer algebra systems with rigor and efficiency. In particular, they allow the symbolic manipulation of several classes of special functions (such as Eulerian functions, hypergeometric functions, hyperlogarithms, harmonic sums, etc.) and of special values involved in solutions of differential equations.

We invite contributions with the following topics:

- Combinatorial Indexing and Calculus

- Ecalle's Mould Calculus

- Free Lie Algebras

- Hopf Algebras and Their Combinatorics

- Noncommutative Differential Equations

- Multiple Zeta Values (or Zeta Polymorphism) and Polylogarithms

- Representative Series (Sweedler's duals and their combinatorics)

Call for abstracts: If you are interested in giving a talk, you can send a proposal with title and abstract (2-3 pages) to both organizers of the session. Abstracts should be prepared using the ACM CCA format. The deadline for the submission of an abstract is May 30th 2025. Abstracts will be reviewed as they come in, so early submission is encouraged!

<u>Speakers and Talks</u>[1] (list in progress):

Olivier BOUILLOT

Title : *Multiple Divided Bernoulli Polynomials and Numbers*

([abstract](#)) (slides)

V. Chiên BUI

Title : *Various Products of Representative Series and Some Applications*

([abstract](#)) (slides)

Steven CHARLTON

Title : G*oncharov's Programme, and Symmetries of Weight 6 Multiple Polylogarithms*

([abstract](#)) (slides)

Gérard H.E. DUCHAMP

Title : *Extension by continuity of the domain of Poly- and Hyper-logarithms*

([abstract](#)) (slides)

Jean-Yves ENJALBERT

Title : *Multiplicative structure of some multivariate functions*

([abstract](#)) (slides)

Vincel HOANG NGOC MINH

Title : *Various bialgebras of representative functions on free monoids*

([abstract](#)) (slides)

Kouhei KITAMURA

Title : *A Combinatorial Property of Multiple Polylogarithms at Non-positive Indices*

([abstract](#)) (slides)

Nao KOMIAYMA

Title : *On Kashiwara-Vergne Lie Algebra and Double Shuffle Lie Algebra in Mould Theory*

([abstract](#)) (slides)

Q. Hoàn NGO

Title : *Families of Eulerian Functions Involved in Regularization of Divergent Polyzetas*

([abstract](#)) (slides)

Vu NGUYEN DINH

Title : *A Generalization of Magnus Duality*

([abstract](#)) (slides)

Jianqiang ZHAO

Title : *Unramified Variants of Motivic Multiple Zeta Values*

([abstract](#)) (slides)

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1   Depending on circumstances, some people of the listed names may contribute only online.